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# PUBLIC-HEALTH SUBJECTS

BEFORE THE

AMERICAN SOCIAL SCIENCE ASSOCIATION

AT SARATOGA, N. Y., SEPT. 5-8, 1882.

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THE MICHIGAN PLAN FOR GENERAL BOARDS OF HEALTH,  
CARE OF CHRONIC INEBRIATES, HOUSE-DRAINAGE,  
HEALTH OF CRIMINAL WOMEN.

—◆—

REPORTED BY

HON. LE ROY PARKER, OF FLINT, MICH.,

PRESIDENT STATE BOARD OF HEALTH.

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[Reprinted from the Annual Report of the Michigan State Board of Health, for the  
year 1882.]

[REPRINT No. 137.]

## PUBLIC HEALTH SUBJECTS

BEFORE THE AMERICAN SOCIAL SCIENCE ASSOCIATION, AT ITS  
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BY HON. LEROY PARKER, OF FLINT, MICH.

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GENTLEMEN OF THE STATE BOARD OF HEALTH:—In accordance with your request, I attended as the representative of this Board, the annual meeting of the American Social Science Association, held at Saratoga, Sept. 5, 6, 7, and 8.

The meetings of the Association were more numerous attended than ever before, and an unusual degree of interest was manifested in the proceedings of the various departments. This was particularly noticeable upon the day devoted to the Department of Health, when a number of interesting and instructive papers were read, and some valuable discussions had upon the various topics presented.

The meetings of this department were presided over by Dr. Walter Channing, of Boston, who for the past two years has acted as chairman of the Department of Health. Much of the success which attended this and the previous meeting has been due to the careful and judicious management of Dr. Channing in selecting timely subjects for presentation, and able and experienced sanitarians to prepare the papers to be read. A change in the Secretaryship of the Department of Health was made at this meeting, Dr. Ezra M. Hunt, of Trenton, New Jersey, Secretary of the New Jersey State Board of Health, being elected to succeed Eliza M. Mosher, M. D., of South Framingham, Mass.

Dr. Channing in his opening address stated that correspondence among the members of the Health Department had brought forward two prominent subjects for discussion, as follows: "Inebriety," and "The influence of places of detention on the health of females," which were presented in papers read before the association, the first by Dr. A. N. Blodgett of Boston, and the second by Eliza M. Mosher, M. D., Superintendent of the Massachusetts Reformatory for Women at Sherborn, Mass.

Dr. Channing said, in reference to boards of health:

I cannot look at the vast work which has been accomplished by boards of health within the past few years without amazement. Coupled with this surprise, I have a feeling of the liveliest satisfaction; for in these boards I see the beginning of that rational struggle with disease which soon will check our rapid progress toward physical degeneration. Dr. Farr, the great English specialist in this branch, once said: "How, out of existing seed, to raise races of men to divine perfection

is the final problem of public medicine"; and this problem health boards have already done much to solve. Only in the year 1869 the Massachusetts Board of Health, the pioneer State board in America, was formed. We find in section 2 of the act which created it the following words, which in some measure explain the contemplated nature of its work: "The board shall take cognizance of the interests of health and life among the citizens of the Commonwealth; shall make sanitary investigations and inquiries in respect to the people, the sources of disease, and especially of epidemics; the sources of mortality and the effects of localities, employments, conditions, and circumstances on the public health."

Dr. Henry I. Bowditch, of Boston, known far outside of Massachusetts as a prominent physician, and a man of remarkable humanity and kindness, had the subject of sanitary science very deeply at heart, and it is to his clear-sighted vision and appreciation of the needs of his fellow-men that much of the success of this first board is due. He was its first chairman, and in his opening address he said: "Our work is for the far future as well as for the present." It is not to be supposed, however, that he even dreamed of what has already been accomplished in the thirteen years since his address.

The only way in which it seems possible to account for this discovery, as it may be called, of "boards of health," is that the time was ripe for their advent. We have found our nineteenth century civilization bringing with it many, even innumerable advantages, improvements and ameliorations, but we have found associated with these things a great variety of diseases. We have civilized whole continents, built magnificent cities, turned night into day, conquered time, but have lost the art of healthful living. Happily, however, the advances in medical science during the last quarter of a century have established a more rational method of regarding disease, and have brought us to think less of cures and more of prevention. This progress in medical science, combined with the great pressure that has been made on us by the diseases of civilization, so long unheeded, has obliged us to turn our attention in this direction. Furthermore, human nature itself has become more rational and reasonable, and less inclined than in former times to be pacified, cheated and cured by the mysticisms, panaceas, and dogmas of a well-meaning but often misguided medical faculty. Education has made the masses less influenced by superstition, and though investigations in hygiene were made prior to the establishment of boards of health, it was not until after that time that systematic investigations were made. Increased knowledge of the laws of health have educated the people to recognize that such laws are in force and must not be neglected, but obeyed. While yet far from accomplishing all that can be done, the gigantic work still goes on bravely, and it is to be hoped not only the faculty but also the laity will assist in its furtherance. The terrible infant mortality in New York and other cities, for instance, makes us painfully aware of the vastness of the work to be done. Dr. B. W. Richardson said recently that he had never seen a perfectly healthy child, and it might be safely said that no child was born free from the taint of disease. It was inherited defects which accounted largely for the enormous infant mortality. These remarks indicate one of the directions in which health boards should work. Other fertile fields of inquiry may be found in nervous diseases. A whole generation of nervous invalids has sprung into existence, reaching from simple irritability into fully-developed insanity. The causes must be found in a wide study of American life, and they are indeed multifarious. Continuous over-pressure extends into professional and business life, and the struggle to meet these extravagant demands becomes harder. Excessive education of boys and girls of tender age is another evil. The minds of some will not retain the knowledge poured in, but with others the pressure makes a break. Boys here have a great advantage over girls. In the education of the future it will be imperative that more attention be paid to the physical education and less to mere intellectual development. This attention is already beginning to be paid. We should, as an association, study deeply into the subject of heredity; the physical education of girls and boys; domestic employments; the causes of nervous disease and insanity.

Dr. Channing closed his valuable address by quoting some words from Dr. Oliver Wendell Holmes upon the progress in the art of prevention.

The opening address by Dr. Channing was followed by an exceedingly interesting paper prepared by Dr. Henry B. Baker, Secretary of the Michigan State Board of Health, which I here present in full:

#### THE MICHIGAN PLAN FOR GENERAL BOARDS OF HEALTH.

So far as known to the author of this paper, the Michigan State Board of Health was the first board of health purposely established on its plan,—which plan may be briefly outlined as follows: It provides for the collection and dissemination of information, and the general advisory supervision of all health interests of the people within the State; but does not give the Board power to enforce any orders, other than those connected with its functions just stated. I say "purposely established," because there have been and there still are many local boards of health which,

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although theoretically supposed to be effective organizations for the public safety, yet are so hampered by lack of power and means which should be given them by the city council, or other local authority, that they can do little or nothing for the public good. Such local boards may get hints of methods of useful work, which even with their limited means they could adopt, from study of methods employed by the Michigan State Board of Health; but the theory of the law in Michigan is that the local boards of health should have the power, and should do the work of combatting local nuisances and all other local causes of sickness, including the restriction of contagious diseases. The State Board was established to serve as a generalizing center; to do for the local boards somewhat as the general does for the troops in the time of war,—ascertain the whereabouts of the enemy, spy out and give warning of the very first indications of threatened approach of an epidemic disease, secure prompt report to headquarters of every item of information which can be made available for the good of all, study up the best methods of drill and warfare, and communicate the same to the several local officers and men who are constantly employed in the real work of combatting the enemies, which in this case are not very infrequently the same as in time of war, namely, human beings, who think that they have interests different from and antagonistic to those of the great majority. In such cases the local health authority needs to know just what it can do, and the State Board of Health organized on the Michigan plan, can usually respond immediately to the question by references to the law and to best methods of procedure. But oftener than such demands for information come those on the occurrence of a communicable disease, such as scarlet fever, diphtheria, or small-pox, when the local health board, which has usually never before had to deal with such a case, needs to know immediately what are the measures which need to be inaugurated and maintained until the danger is over; then if there is a State board of health on the Michigan plan, appeal to it for instruction can usually have as ready response as an appeal to a commanding general for orders, and the best available knowledge (which has resulted from the collection of the information of the best methods of any or all of the local boards of health) can immediately be placed at the disposal of the local board, thus enabling it to do in its emergency vastly better than would otherwise be possible.

That, in order to avoid or prevent a disease we need to know its cause, is considered a truism: yet little general systematic effort to gain such useful knowledge is being made, nor is it likely to be made, unless by some such means as by general boards of health. For any progress in the knowledge of the causes of diseases, facts and statistics of great numbers of cases of sickness from these diseases, and of the conditions which were coincident with such sickness, are essential; and such facts and statistics cannot, by any local board, be collected in sufficient numbers, nor over sufficiently wide areas, to throw out the influence of local circumstances; so that for any such progress in knowledge it is essential that there be a general board of health to collect and collate the fragmentary material which the local boards of health can supply, and from it learn the laws which prevail in the production of disease and death. For such work, also, time is required, and a more continuous length of service than is usual for local boards of health to give, because of political and other changes. Until very recently there has been no material progress in knowledge on such subjects; yet enough has been learned to show that such knowledge can readily be gained by systematic efforts to obtain it. There is, apparently, no difficulty in learning the causes of every disease. Sanitarians know enough to begin and carry on the study, the collection and collation of the necessary facts, and the experimental proof of the modes of the production of disease. They are ready to do this work as fast as governments are sufficiently intelligent to appreciate it. They wait for governments because though it is work which benefits all mankind, unless mankind through its organized governments provides recompense, the benefit to the individual worker is not sufficient compensation; they can make more money as physicians treating the people for diseases which the people do not know enough to avoid or prevent, but which they pay roundly to be treated for when once the sickness has come upon them.

But such boards of health as we have known in the past could never ascertain the causes of diseases. As well might one expect the soldier in the field, loaded down with his knapsack, his rations, and his weapons, and fighting with a musket, to be able to learn the exact whereabouts of the enemy's forces and his reserves, and be able to plan and successfully execute a battle. The commanding general does not carry a musket. So the general board of health needs to be free from the immediate battling with local nuisances; and the larger the nuisance, the greater is the necessity for freeing the general board from combat with it. The Massachusetts State Board of Health was first organized on the theory that the gigantic nuisances in the State were to be dealt with by it. That Board did good work, but no one will deny that while engaged in the celebrated case of "*Tyler et al. vs. Squires et al.*," etc., it could not, as otherwise it might, devote all its energies to searching out the causes of diseases, nor towards generalizing and systematizing the public-health work of its State. That Board maintained its existence for about ten years, and then ceased as an independent and separate board,—its functions, however, in its present condition as a mixed board becoming more nearly like those of the ideal general board—on the Michigan plan; although the public health, being only one of several subjects considered by the present Board, it may not receive that undivided attention of specialists which the importance of the subject warrants.

At the time, and long previous to the time, the National Board of Health of the United States was organized, the author of this paper pleaded\* and here continues to plead for the maintenance of that general board of health, which shall do for the United States what a State Board of Health on the Michigan plan aims to do for a State — a commission or board which shall systematize and utilize the vital statistics in the United States Census, and all the information now collected by all the Government departments, and which should otherwise collect and disseminate information essential to the best public-health work in this country.

If the United States will maintain such a generalizing center of public health work in this country, we shall soon see the grandest progress that the world has ever witnessed; for it will set in operation a movement which cannot fail to yield knowledge of the conditions under which each and every disease proves destructive of human life and happiness. But in this most important work which a government can undertake for a people—a work which is designed to accomplish a greater amelioration of their condition than has any previously undertaken in this or any other country,—it is essential in order to secure the best results, that the central generalizing body shall have the confidence and co-operation of the great body of sanitarians throughout the whole country, and of a large proportion of the local and State boards of health, whose work is by it to be consolidated for the public good. Such has been and is the case as regards the National Board of Health; but the government has recently taken a much regretted step backward by abolishing one of its means of prompt dissemination of information, namely, the weekly bulletin, and by crippling one of its sources of information,—that by its inspection systems, which had just begun to yield information valuable for incorporation with that from other sources.

Members of Congress seem to be unable to appreciate the fact that movements for the prevention of diseases, are of vastly greater importance than are those measures designed simply to palliate the results of the neglect of such prevention; for we learn from the Congressional Record that recently large sums of the public money were freely voted to build hospitals for a small, special class of citizens, or at least persons, while these same Congressmen failed to vote to freely sustain the National Board of Health in its work, which is for the good of every citizen of the country, and even for humanity throughout the world. Palatial marine hospitals in each large sea port, for the special benefit of a few sailors, sick with syphilis and other preventable diseases, may be proper objects for Congress to spend the people's money for; but sooner or later stinging criticisms will attach to such action by our representatives; especially if, as was recently the case, the neglect to provide the means for the most successful work by those charged with the highest duties which can be undertaken,—inquiries into the causes and best means of preventing all diseases which are yet permitted to interfere with the "life and the pursuit of happiness," by those who maintain this government for the people.

Comparatively little has yet been done in this country toward the systematic work which has been suggested in this paper; for the reason that individual effort cannot accomplish it, and those we elect to govern us have not all informed themselves on the subject. Sanitary science is one of the latest sciences. It utilizes sciences which also are new. Already with reference to several of the most important diseases, it enables us to predict their proportional increase or decrease just as far in advance of their occurrence as the meteorologist can foretell the weather; thus giving, in general terms, the curves by seasons, and even by months of the year; and we are able to add to this the specific prediction of the proportional increase or decrease for the immediate future within about the range of probability reached with respect to the weather, upon which the particular diseases referred to greatly depend. But in such studies it is needful to include facts relative to wide areas; in fact what the United States signal service gains for meteorological progress by being able to generalize its work throughout the whole country, may easily be paralleled by the gain in sanitary science by a similar broadening of the field of view, from local and State to that of a properly sustained National Board of Health. Whenever that is done, the signal service itself will have its usefulness wonderfully enhanced, because its work will be made available for use in saving human life in ways not now imagined by many people, yet which those most actively engaged in public health work know, are not only possible but are entirely practicable. May the day soon come when we may be permitted to see such beneficent results.

The paper by Dr. Baker was discussed by Secretary F. B. Sanborn, who thought that State Boards of Health should be invested with administrative powers; that the outbreak of epidemics of small-pox and other diseases dangerous to the public health could be better checked and suppressed by the action which the State boards might take, than if administrative functions were permitted to local boards alone.

\* Pages 356 and 360, Trans. Am. Med. Asstn, 1874. Also pages 15-18 Reports and Resolutions Relating to Sanitary Legislation, presented to the Am. Pub. Health Asstn., at its meeting in Richmond, Va. Nov. 19-22, 1878. Riverside Press, Cambridge, Mass., 1878. Also Vol. IV., Trans. of the Am. Pub. Health Asstn.

In reply to Mr. Sanborn's remarks, I advocated the theory of Dr. Baker's paper, and contended that it was not necessary for State Boards of Health to be invested with power to actively engage in dealing with particular cases of dangerous disease; that the local boards could more effectively deal with the cases within their jurisdiction than a State Board, whose members might be remote from the place where a dangerous disease showed itself. That in our State the aim had been to emphasize the system of local boards, and to throw the responsibility of caring for diseases upon the municipalities themselves.

As an introduction to Dr. Blodgett's paper on Chronic Inebriates, Dr. Channing in his address made remarks of which the following is an abstract:—

We are told that insanity has greatly increased during the last few years, and if we turn to asylum reports for an explanation of this statement we see many causes assigned. Sometimes it is ill health, business anxiety, family affliction, religion; sometimes more remarkable causes, such as the following, which I saw mentioned recently: "Slander, fear, fright, remorse, revenge, anxiety, spirit rappings, camp life, loss of law suit," etc. At the asylum where these statistics were tabulated, 5,052 patients had been under treatment since 1855, and the assigned causes in these cases were physical in 2,070 cases, moral in 1,260, and unknown in 1,722. We do not doubt that these causes were the direct and exciting ones. But were there not many others? Could the moral be separated from the physical causes? Did not the heredity of the patient play a part? Notwithstanding the inference to be drawn from the medical testimony in the recent Guiteau trial, that heredity is not of much account, I fear that we must agree with Dr. Richardson and others that it is of vast importance. But the causes of nervous and mental disease are most varied and complex, and we shall make a sad mistake if we attach too much importance to one element only of this involved causative.

If we search for causes of mental and nervous instability in our daily life we shall be at once impressed by the fact that our lives are too full; that we are laboring under a heavier load, socially, than we are able to carry. There is too much to be done. There is too much literature, too much art, too much music, too much science, too many theatres, too much dress, too much social gayety. Such a multiplicity of important objects in life wearies and overtasks our mental powers, and renders us less able to successfully struggle against the cares and responsibilities that are imperative. If Mr. Bert is right when he says, "When you educate boy, you perhaps educate a man; and when you educate a girl you are laying the foundation for the education of a family," we cannot well over-estimate the importance of the proper physical education of young persons, especially girls.

Dr. Blodgett pursued the same topic in his long paper, and said, among other things:—

The expression of increased nervous excitability is observed in nearly all the ordinary walks of life, and in all conditions of people. Within the memory of most of those present there have been such changes in the personal observation of each one as to verify this assertion. The causes are manifold, and reach into almost every avenue of life. The abolition of principle, which is to the mind what the pole-star is to the mariner, is one of the most fatal accidents which can befall any individual. Its absence leaves the mind without a proper degree of rectitude; without that necessary steadfastness of purpose and consistency of method which are essential to healthy and vigorous mental activity. Weakness and debility of the mental functions must as surely follow its loss as physical infirmity succeeds the loss of any material condition of animal life. The cumulative result of this defect is continually augmenting, like that of the opium habit, or any other profound and growing influence operating upon the foundations of being in the individual. Business speculation has been a powerful agent in disturbing the mental equilibrium of very many people within the past few years. Increased mental vulnerability of our population is caused by changes in the private and domestic life of the people. The aggregation of people in large cities tends to injure the home life, and its quiet restraint and peaceful influences are lost to those natures which most need them. If, now, unfortunate individuals become the slaves of passion or appetite, in any specific form, their bondage will be more oppressive from the lack of a powerful will to resist, and a firm principle to guide, and the danger from encroachments of other vices will be augmented owing to diminished power of self-control due to the degeneration or abolition of standard mental qualities. Human nature cannot indefinitely support the increased strain to which a continually enlarging number of persons is continually exposed. Natural food and natural rest will not provide for unnatural and superhuman exertion. There is a limit to all healthy energy. Beyond this limit labor is accomplished only at the expense of vitality. In this extremity—which is exactly the condition in which a large number of our people find themselves—the use of artificial stimulants is



necessary in order to follow an irrational and insane ambition. There is a sensation of exhaustion, which imperatively demands the aid of a stimulant, and is temporarily relieved by its employment. The individual is led to think that the remedy has been found, and continues the use of an agent which has afforded such marked benefit. Any article which thus becomes necessary to the performance of daily labor may gradually acquire such power over the individual that the force of habit, combined with the physiological action of the substance, may at length render all efforts at its abandonment entirely futile. The cumulative effect of prolonged over-stimulation is two-fold: first, the action upon the nervous system as a spur by which an extra amount of energy may be temporarily evolved, with a gradual encroachment on the normal powers of the organism, until no extra energy can be awakened except from the effect of stimulation; and second, a change in the physiological and organic relation of the structural elements composing the nobler functional organs, with gradual degeneration of the higher mental and moral qualities; so that the foundations of character are undermined, and the powers of reason are perverted, while the emotions and sympathies are excited to increased activity, and the unfortunate individual becomes a slave to sudden and irresistible impulses.

It is, therefore, not strange that the victim of drink often becomes a charge to society. He should not be considered a hardened criminal but a sick and diseased person. These persons should be treated, but there is not an institution nor an establishment adapted to give them remedial or curative treatment, or for their care, if incurable. These victims are generally found among the poorer classes and are brought to notice through the commission of crime, though his lack of moral perception may be entirely wanting. Of the institutions founded to treat these unfortunates, some are conducted by private enterprise to make money, and those established by government at public expense. The first has many defects, the first being that the patient is a boarder and is kept only as long as he pays, without regard to his condition. Also the patient dislikes the restraint, and often leaves before cured. The only institutions recognized by governments for such patients are prisons and madhouses, from whose walls he emerges with an indelible stigma. In view of the existing facts, we are safe in asserting that no wise, humane, and practical plan has been found to insure protection to society and justice to the individual. To suggest a remedy is not so easy. There must be, however, a suitable disposition of authority which shall place these people within the control of some restraining force. There must be a judicious amount of physical toil to induce fatigue and desire for sleep, open air life, strong and nutritious but unstimulating diet, regular habits, and abundance of sleep.

Dr. Blodgett's paper was earnestly discussed. President Wayland said if a drunkard can be cured he should be in a reformatory, and if he cannot be cured he ought not to be outside of one.

Judge Peabody, of New York, said the drunkard was insane, not only as regards his appetite but in other respects. He is responsible for the course of conduct which has brought about his insanity.

Rev. Mr. Humphstone believed that drunkenness was a disease.

Dr. Channing differed from Mr. Humphstone and contended that drunkenness was a crime.

Rev. Irenæus C. Prime, editor of the New York Observer, earnestly insisted that intemperance was a crime and not a disease. It begets disease. Crime is sin against God and man, and that is what intemperance is. This is not a question to be looked at in the light of remedies for disease; not what we shall do to cure men of intemperance as we cure men of small-pox and the fever and ague. Physicians and social scientists who teach this doctrine have committed an immense injury to the cause of reform of our unfortunate fellow men, because they paralyze the arm put forth to save them, and set us upon a track which has hitherto lamentably failed in its efforts to save and reform. The remedy for this great evil was in the hands of the State, and the way to do that was to prohibit the sale of intoxicating liquors. We must legislate to destroy the source of the evil. If it is a disease, let the law arrest it. If it is a crime, apply the law to stop it.

A paper prepared by Dr. Ezra M. Hunt, Secretary of the New Jersey State Board of Health, upon the health care of households, with special reference to house-drainage, was read, of which the following is an abstract:—

The term house-drainage, as now most frequently applied, has reference to the removal of all soiled liquids, and of such offal, secretions, and excretions as are easily or naturally reduced to a liquid or semi-liquid state.

The principal fact as to this removal is that it shall be made without undue delay. The rule is that in a health-preserving or disease-breeding sense, no such liquid or offal is objectionable until 12 to 18 hours after its production or voidance.\* Hence all arguments as to the insanitary effects of its handling, or of its conveyance to rivers, are futile, if only you can insure prompt delivery. To call it *filth*, in a diseased sense, at the start, and to argue against its conveyance because it has odor, or, because of detention, it becomes pestiferous, is no more reasonable than to judge tomatoes unwholesome because decayed tomatoes are sickening. This point is important to be made, because so many arguments as to river-pollution, or as to the evils of other transportation and delivery of sewage, are based upon the assumption that fresh sewage is unsafe. It is only unsafe to those who store it, or who do not succeed in getting rid of it before it becomes stale. The one centre problem to solve in house-drainage is, how to get clear of fresh sewage.

An answer often, and perhaps always in order, is to have as little of it as possible. If a proper care is taken not to over-produce in certain directions; not to use water extravagantly; to properly separate such dry material as does not necessarily find its way into water-carriage, and thus to fairly limit quantity in feasible directions, much of the evil arising from needless accumulation would be prevented.

A second answer, in many cases, is to apply the principle of separation and separate dealing with different products, as well as that of quick removal. Thus, in a small garden, it is very proper to throw the Monday wash-water around the grape-vines, and the dish-water of each day around some other selected plants in succession, when it would not be feasible to throw all in one place or to throw some of the products in any visible place. The principle of division of labor as required by plants is as applicable as when applied to animals. It is with this view that there are many advocates of a dry-earth system which seeks to take charge of the more solid excreta, to carefully select all garbage, and then to pass to the flush tank and drain-tile system, or small sewer system, all other composit liquids.

Where there are no sewers, the close application of methods of separation is of the greatest importance. The laundry and kitchen slop fluids can be largely disposed of upon the lawn, or in a cultivated strip of the garden. Garbage can be separated for punctual delivery, to classes not difficult to find, if only there is this kind of selection. The ashes are carefully sifted for admixture with the excreta, or dry earth is made the safe deodorant and disinfectant therefor. The greatest objection to it is that it serves as a kind of excuse for the longer retention of refuse about the house, which is of doubtful propriety, as the rendering innocuous is not always perfect.

Where this separating plan is adopted, the same kind of care as to material used for conveyance is to be employed as where the conveyancer is a pipe. Since the vessels are at times open, and so traps do not avail, soap and water, scrubbing, airing, and drying, and all cleanliness come largely into requisition. Tubs should be metal-lined, or so handled as to secure them against saturation; the kitchen sink should always be of metal that admits scrubbing, and the delivery pails equally adapted. The garbage-barrels should be of size, shape, and material adapted to quantity, and should be replaced by a cleansed one each time there is removal, and so secure the advantage of a prompt replacement by a vessel that brings back neither particles nor odors of what was carried away.

The earth-closet must also have its mode of use and frequency of earth removal, such as to avoid all odors, or all possibility of a retention of stored filth instead of clean dirt. It is too often forgotten that the closet must have its well-aired room, of easy access to draughts, and that the commode used must be so left and kept as to admit of the freest circulation of air. Without this there comes a confined smell and a mawkish, sluggish air, both uncomfortable and unhealthy. Every law as to ventilation applied to a house water-closet needs equal provision and enforcement where an earth-closet is kept. Indeed, the rooms or places in which any vessels are kept, which are used for soiled liquids, garbage-tubs, etc., need more care of ventilation, dryness, and sunlight, than do any other parts of the building.

It must be remembered as to all rooms in which garbage or other material is being separated for removal, that fresh, pure air, free from undue dampness, is a great desideratum. It is a chief objection to cellar kitchens or to underground store places for refuse, that the absence of light, the dampness and the impeded circulation of air afford conditions favorable only to the lowest forms of vegetable life, and that these seem easily to invade animal life as found in man.

The first principles of house drainage are, (a) that wherever there is a sink, bowl, closet, or any other contrivance for the reception of slops or excreta, it must be made of such smooth, non-absorbent material as will not retain either soiling or odor and be so accessible as to admit of the free use of soap and water; (b) that at, or near the joining of the out-going pipe to such receptacle,

\* [Dr. Hunt would probably not assert this of sewage containing excreta from persons sick with specific or communicable diseases; cholera, however, being one disease of which the statement is generally believed to be true.—H. B. B., Sec. S. B. of H.]

there should be a trap or seal which will not admit of the return of any gas through it; (c) that beyond that trap and at the exit of the pipe from the building, there should be free opportunity for the circulation of common air. This generally means that at the point where the main house-pipe emerges from the building, there should be such communication of the pipe itself with the outer air as to freely admit it.

The complaint that the water which forms the trap is soiled and absorbs gases from the outer side, so as to pass them within, does not seem to be sustained unless the liquid itself is already poison, or the trap is so seldom used as to allow the trap-water to become intensely stale or to evaporate entirely away. Because this often occurs in summer hotels during their disuse the rest of the year, it has been proposed to remove all the traps at the end of a season, empty them and fill them with oil, or pour down enough oil to force out the water in the trap. That water trap is most perfect which is just deep enough to make a complete seal, which is so smooth as not to retain any organic matter, and which is of that shape which leaves the least inside surface untouched by the flowing stream. It is because an S-shaped trap leaves less than a D that it is generally preferred. Such traps as the Bell trap are disapproved because, in addition to an unwashed surface, they provide a kind of small local cesspool. There is a slight modification sometimes from the S trap such as we see in the Adec, to provide against possible syphonage in some cases, to which we shall allude hereafter.

The Bower trap is a specimen of kinds which do not rely entirely on a water seal, but use the water to float a ball or control a valve so as to close against the inflow of foul air. \* \* \*

But a still brighter and better idea has of late supplemented the science and the art of a sweet home. It is that the gases of decay, as found in house pipes or sewers are mostly the result of the deprivation of common air in circulation: that the way to avoid sewer or house gas is not to make it, and the way not to make it as to correct it, if it exists, is to allow every pipe to be thoroughly flushed and cleansed by the active circulation of pure air. That is the valuable thought on modern house drainage or sewerage. It is so to construct pipes as that at each extremity there shall be the best opportunity for the ingress or egress of common air. It is for this reason that it is now insisted that every main soil-pipe should have an opening above the roof, and another as it emerges from the building, with no trap intervening in its course. It is assumed that all the pipes leading into it from closets, etc., on the different stories, will be so short as that their connection with the main pipes will secure for them a draught sufficient to dispense with that opening at each end, upon which as a rule we depend for draught.

This principle of a soil-pipe permitting the free ingress and egress of common air is now, we think, the ruling idea of house sewer-pipe arrangement. Details are not as yet completely settled. We need a little more testing and computation to assure us when and where not there will be such currents in pipes open at both ends, as will secure a sufficient flush of air. What is the best size of tube; how in case of stagnant or insufficient current activity is to be secured; how far the main tube can be depended upon to secure ventilation of side tubes; how far heat may be made available as a motor of air in tubes; and many such questions not difficult of solution when accurate tests in sufficient numbers shall be made. \* \* \* Only we must be sure that in our pipes air actually does flow as we believe it does. Every chimney does not draw enough, and every tube heavy with foul or damp air does not have current enough.

An adequate draught here is not merely for carrying away, but for oxidation and other chemical transformation. A large bellows blowing into a pipe will purify its air faster than water, while suction not only displaces but propels the sewer air.

Alternate air-flush and water-flush can therefore be said to be the modern disinfectants for pipes. We are yet to be assured just how best to make sure, sufficient currents of air through pipes. We are to remember a calibre of from 4 to 6 inches is needed, that the ends should be so situated as to command, and perhaps in some large cases have funnels like those of a large ship, which can be turned so as to command draught.

If the house sewage is to go to sub-soil pipes, or to a house cesspool, or if there is an outside privy, these of themselves may cause soil pollution or air pollution, if in near proximity to the house.

Where the sewage is conducted to a tank like Field's flush tank to be distributed to loose laid pipes undergrounds, two principles are made available. One is that the automatic flush every few hours removes the liquid soon enough, and at the same time scours or cleanses by the force of its motion. The other is by this intermitted flow air and water do alternate purifying service in the pipes, while at the same time the sewage is distributed so few inches underground as to allow of its natural appropriation by the herbage and crops. In the use of this plan, careful but not difficult administration is necessary, in order that the *tank* may be kept in cleanly condition, and not become a cesspool, and that such tillage is used as enables the soil to appropriate the plant food placed within it, thus preventing soil-pollution.

Where a cesspool is or has to be tolerated, there are two methods. The one is to have a cesspool that is made without cemented bottom, or in whole or in part with the sides laid with loose stone or brick, so as to allow all liquids to soak out, carrying with them much organic matter. This

soakage will continue longer if the grease from liquids is separated before discharge into them. The apparent success of this method will largely depend upon the character of the soil. If it is of a loose or gravelly character, so as to admit air and liquids freely, no doubt much of this matter is oxydized or flows off, even where too deep to be reached by the roots of grasses, plants, or trees. But in all cities there is a limit to this process, and it is often fraught with risk in country places. We know of a recent outbreak of typhoid fever, in which, owing to a change of strata at one point, and a dip contrary to the contour of the surface, the sewage found its way around and into the walls of a cellar basement, and so without much odor saturated the building. In other cases unusual heat of a season brings this unappropriated manure which has thus been lodged in the soil into fermentative activity, and administers it to persons instead of to plants. In other cases the *debris* which has been left in the uncleaned cesspool itself takes on degraded decomposition and administers its own attenuated and peculiar poison to a household. The cesspool system, therefore, needs always to be labeled "extra hazardous," although an explosion cannot be warranted each Summer.

The other cesspool system is to have a closed tank or cistern thoroughly cemented, and then to depend on odorless excavating apparatus to empty it at proper intervals. Although these are often crooked or seamed, as a rule they prevent soil pollution, and so are preferable to the uncemented ones. The emptying should, as far as possible, be done in late fall and early spring, although perfection of method is now claimed to justify emptying at any time.

Should cesspools be ventilated or exposed to light? It is claimed by some that either air or light in contact with stagnant filth or befouled liquids tends to excite them to decomposition, and so do not mitigate such concentrated evils.

The other view is that light and air prevent the more degraded forms of decomposition, and so moderate the evil.

No doubt these stagnant pools do provide themselves with a kind of scum or protection which partly seals them from the air, and for a time they are less nocuous than if disturbed. We think the best sustained conclusion is that it is better not to expose them to sunlight, because of sun-heat, but that it is better by means of an open tube or chimney, or a kind of double chimney, to secure circulation of air between the top of the liquid and the ground level. Cesspools should in all cases be as far removed as possible from the dwelling, so that the air about these may not be directly contaminated. As to pipe connections by the methods already indicated, we believe all influx of air from them or from other forms of sewers can be prevented. Having thus pointed out the means for house sewer drains and their immediate connections, we leave it for others to apply the same general principles to more extended sewers.

The paper by Dr. D. F. Lincoln, on The Sanitary Condition of Boarding Schools, was read only by title, and it was announced that it would be published in full in the Sanitary Engineer.

#### THE HEALTH OF CRIMINAL WOMEN.

An interesting paper on this subject by Dr. Eliza M. Mosher, of the Sherborn Reformatory for Women, was read. The following is an abstract:—

The word criminal, though commonly applied to the inmates of penal institutions, includes in its strict sense, all persons who commit an offense against law, whether convicted or otherwise. In America the number of such persons within the precincts of each state, depends not only upon the amount of its population, the stringency of its laws, and the vigilance of its police force, but also upon the number and size of its cities, and the industries which it carries on. Wherever men and women are herded together, as in the poor and squalid portions of large cities, or great numbers are employed at special work, as in our manufacturing towns, there will be found those influences which make criminals of men, and even more surely of women.

The physical condition of individuals often deteriorates *pari passu* with the moral nature, especially in those cases where intemperance and unchastity are the underlying vices.

To study the diseases of such a class, with the hope of arriving at any but the most general conclusions is a formidable task; and yet, since the inmates of our jails, houses of correction, and prisons are but representatives of a much larger number, who walk our streets, scattering contagion, both moral and physical, and filling our hospitals and dispensaries with patients, it seems worth while to see what can be deduced by a careful examination of a number sufficiently large to represent the class. The object of this paper is, therefore, to ascertain if possible the extent and direction of the influence which a life of crime exerts upon the health of individuals; and, as our observations have been mainly confined to criminal women, we have limited our study to this class. The statistics which we shall present have been taken from the records of the Massachusetts State reformatory prison for women, and extend over a period of four years. During this time 2,196 women were committed to the prison for crimes which, for the sake of

convenience, we have classified under the following heads, viz.: I. Offenses against person and property. II. Offenses against chastity. III. Offenses against public order.

The first class includes all the cases of assault, fraud, larceny, arson, burglary, manslaughter, etc. In this class we find but 310 commitments; the larger number of these women were of foreign birth or parentage; their ages range between 15 and 53 years; nearly all could read and write, and about half were unmarried. Many were sentenced for the first time.

In the second class there were 515 commitments. Of those a majority were natives of the United States and British Provinces; most of them could read and write, and more than half were unmarried.

The third class includes the cases of drunkenness, vagrancy, disturbers of the peace, common railers and brawlers, idle and disorderly persons (which is but another name for drunkenness and unchastity), etc. There were 1,271 such women committed, mainly of foreign birth; among the number were many old women, though the average age was about 30 years. A large number could neither read nor write, and fully three-fourths were married.

It is safe to say, that of the whole number committed during the four years, more than four-fifths were intemperate, and more than three fourths were unchaste.

Turning now to the hospital record, we find 2,076 cases of illness during this time. Some of these were readmissions of the same individual. A small proportion were infants, which, with the cases recorded under the head of "slight ailments," we have thought best to exclude from our analysis, thus leaving 1,704 cases of illness, of which a careful diagnosis was made, and a record of symptoms and treatment kept. Upon tabulating these, we find syphilis to be the prevailing disease, 305 cases being on record; to these might be added as many more in whom the disease was not in a sufficiently active form to make their admission to the hospital a necessity. With these figures before us, it is safe to conclude that one woman out of every four committed to the prison was syphilitic. Thirty-two of these cases were found under class I, 100 under class II, and 173 under class III. Of the 100 women sentenced for larceny, who were sick in the hospital during the last two years, 86 were known to be unchaste.

Next in frequency we find cases of alcoholism, of which there were 198; of these 171 were found in class III., 11 and 16 in classes I. and II. respectively; 25 cases of delirium tremens occurred, all but two of which belong in class III. There were 139 cases of tonsillitis, which were very equally distributed among the three classes; 101 of these occurred during the winter of 1878 and '79. Dyspepsia and rheumatism were common ailments, though but 63 cases of each were sufficiently acute in character to need admission to the hospital. The number treated from the dispensary was large. These patients were as widely distributed as the habit of intemperance.

Only 30 well marked cases of insanity were recorded during the four years, and several of these were recommitments to the prison of women who had been transferred to a lunatic hospital during a previous sentence; 20 of the 30 belong under class III.; also 12 of the 15 epileptics who found shelter in the hospital. Paralysis, neuralgia and hysteria prevail most largely in class I., in proportion to the number of commitments; here also are found the greatest number of cases of anæmia and diabetes. Of the seven cases of puerperal fever which occurred, five belong to class II., (offenses against chastity), also eight of the cases of masturbation placed under special treatment. Diseases of the eyes, malarial fever, miscarriages and pulmonary consumption occur in excess also in the second class. Of the last named disease, there were in all 28 cases, in most of which the disease was established when the women were admitted to the prison. But four cases of pneumonia and eight of pleurisy occurred; 21 cases of bronchitis were treated in the hospital; 72 cases of uterine disease were sufficiently severe to need hospital care for a time; a large number of women were able to work, but required medical supervision.

Coming now to the surgical patients, we find but 32 cases in class I. against 65 in class II. and 162 in class III. Abscesses and ulcers occurred in great numbers, as might be expected in a population like this. Rectal diseases also were common. Twenty-four deaths occurred among adults at the prison during the four years; of this number, one died of alcoholism, two of apoplexy, one of brain softening, one of diabetes, one of œdema, one of gangrene of the lungs, one of heart disease, one of entero-colitis, two of peritonitis, five of consumption, one of puerperal fever, two committed suicide, and five died of syphilis. Seventeen of these were found under class III., four under class I. and three under class II. The danger of contagion with so many syphilitics congregated together was great, and complete isolation in many cases was an absolute necessity. If committed for less than two years, they had to be set at liberty before a cure could be perfected, perhaps to become again a source of pollution.

The condition called alcoholism, so often seen in our penal institutions, is one of general depression, following long continued stimulation by intoxicating liquors, with lack of proper food. It is manifested by trembling of the hands and tongue, twitching of the facial muscles, profuse perspirations, an unsteady gait, and incoherence of thought and expression. One woman out of every 11 admitted to the prison was taken into the hospital in this condition. Under a nutritious diet, and rest in bed, these patients soon recovered sufficiently to go to work, but many returned to the

hospital later on, with some other ailment, most often dyspepsia or rheumatism,—those strong allies of intemperance. Some of the cases of delirium tremens were exceedingly violent, but no deaths occurred. Dyspepsia and constipation of the bowels were the two affections of the digestive tract most common among the prisoners, often taxing the skill and patience of the physician more than many severer maladies. Most of the cases of rheumatism were of a chronic character. The small number of cases of pulmonary disease leads us to conclude that affections of the respiratory organs are not a necessary accompaniment of prison life; proper food and clothing, good ventilation, and a fair amount of sunlight, being here, as everywhere, their best preventive. There have been 68 births at the prison; of this number but one mother died, although many were so diseased that their infants died before or shortly after birth. Diseases of the reproductive organs, though common, were not disproportionate to the number of women committed. Among the surgical cases, indolent ulcers, mainly of the leg, were of frequent occurrence, often detaining women in the hospital for weeks who otherwise were able to work. Some of the cases of rectal disease were of long standing, and exceedingly severe in character; while others were so simple as not to need admission to the hospital during treatment. An examination of the foregoing cases leads us to the following conclusions: 1. Intemperance and unchastity are the two vices which fill our penal institutions with women. 2. The influence of these vices is detrimental to health of body, increasing its susceptibility to disease, and lessening its recuperative power. 3. The diseases which follow as a direct result of these vices, are syphilis, alcoholism, dyspepsia, rheumatism, and general anæmia. 4. Morbid conditions of body react upon the moral nature, increasing and perpetuating the tendency to criminality; hence the importance of careful medical supervision, as a reformatory measure. 5. More ample provision should be made in all large cities for the isolation and thorough treatment of venereal patients of both sexes, either by the addition of special wards to the general hospitals, or by the establishment of hospitals exclusively for this class. 6. The women who commit high crimes only, that is, larceny, burglary, arson, manslaughter, etc., possess a more sensitive nervous organization than those who commit offenses against chastity and public order.

After the reading of this paper Mrs. Leonard of Springfield opened the debate on it, by speaking of the general characteristics of criminal women, and what is done for their moral reformation at Sherborn, touching also on the Lancaster industrial school for girls, and what it accomplishes for younger persons of the same class.

A paper on "International Relief in War" was read by Miss Clara Barton, in which the history, the work accomplished, and the objects and aims of the "Association of the Red Cross," an international association for the relief of sufferings by war, pestilence, and famine, and other great national calamities, were set forth in an interesting and scholarly manner.

This paper concluded the series read before the Department of Health.

LEROY PARKER.

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APR. 21, 1904

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